November/December 1994 $2.00

MONTANA OUTDOORS

Our Point of View

SCOTT MCKINLEY

Mule deer

"FWP has no business buying and owning land!"

"FWP can never own enough critical wildlife habitat!"

"Keep ag land in ag production."

"Sportsmen pay the bill for habitat protection."

Do you want to choose sides? Some folks have.

The 1987 Legislature created a habitat acquisition fund often referred to as HB 526. It has not been without controversy. That's why the Fish, Wildlife & Parks Commission and the department have worked with people across the state to develop something called "Habitat Montana." It is intended to build understanding and broaden support for acquisition of land to protect threatened habitats by setting out clear goals and policies (see page 14).

Montana has a long history of conserving wildlife. It stretches back to passage of the first fish and game law during the very first territorial legislature in 1864. Part of that history has involved acquiring important wildlife habitat. The first significant land acquisition by FWP was in 1940 in the Judith Basin.

For years FWP bought mostly winter ranges for big game animals. These lands were part of a larger landscape, and over time we began to recognize that we had to be better neighbors. In fact, by working with our neighbors we found that we could do some good things. Cattle were allowed to graze under a managed system on many game ranges, often in exchange for allowing more big game to winter on neighboring ranches. Weed control and fence repair became high priorities.

Conservation easements are now purchased in some areas instead of acquiring habitat by fee title. This allows private landowners to keep the land as a working ranch, while giving up the right to subdivide, for example, or sodbust the land.

There is a growing recognition that habitat for other species of wildlife also needs protection, not just deer and elk. Many of the lands the department already owns provide habitat for a variety of species, from grizzly bears to bald eagles, bighorn sheep to shrews.

In western Montana land prices have soared and subdivisions have spread like knapweed. We have to act quickly to protect important habitats—often more quickly than our processes or resources allow. That's why we're exploring ways to work with partners like the Rocky Mountain Elk Foundation and The Nature Conservancy. In eastern Montana, land prices are lower and threats less imminent. But feelings against FWP land ownership are greater there, so we try to use conservation easements.

When habitat is protected by conservation easement, the landowner continues to pay the property taxes; when acquired by FWP through fee title, we make annual payments equal to the property taxes.

Montana is a vast state. Names like Sun River, Grant Marsh, Porcupine, Seven Sisters, and Beartooth echo down a corridor of memories for those who have spent hours hunting, hiking, fishing, or birdwatching on their favorite wildlife management area.

Yet, if Montana filled a five-gallon bucket of water, all of our wildlife management areas would only fill a thimble. That's why clear policies and plans are needed to conserve forever the best of the rest of Habitat Montana.

Patrick J. Graham, Director
Montana Fish, Wildlife & Parks

MICHAEL S. QUINTON

With their impressive stature and ruby red crown, sandhill cranes cut a royal figure (page 8).

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The Big Sl

by Sam Curtis

WATER IN THE RAIN GAUGE has turned to ice. The sky outside our kitchen window is ashen and is losing snow in slow, lazy flakes that threaten to get serious. Our neighbor comes over hoping for coffee. He talks of flying to the Bahamas. But all I want to do is curl in a cushy chair and read a book, displaying, perhaps, the basic difference between animals that hibernate in the face of winter and those that migrate to warmer climates.

JAN L. WASSINK

eep

It's understandable for Montana creatures to fly the coop, I guess. We've watched geese, songbirds, and neighbors head south each fall, expending quantities of energy or money escaping the plunging temperatures. But what about these hibernators? Who are they? (Just bears and marmots, right?) And what is this business of hibernation all about?

MIKE LOGAN

DIANE ENSIGN

Honeybees, ladybugs, and other insects have no internal control over their own body temperature and must find places to hole up to withstand climatic extremes. Reptiles, too, are at the mercy of surrounding air temperatures; snapping turtles (opposite page) burrow into the mud of underwater cutbanks to protect themselves from freezing.

Called hibernation (from the Latin *hibernat*, to winter) during low temperatures, and aestivation (from the Latin *aestivat*, to summer) during high temperatures, the big sleep, as we might call it, is a strange world of changing body chemistry and mopey body metabolism. It is practiced by a huge and diverse array of creatures you know: squirrels, chipmunks, bears, rattlesnakes, frogs, salamanders, spiders, woodchucks, raccoons, skunks, lizards, clams, earthworms, turtles, snails, ants, beetles, bats, opossums, moths, bees, birds, and fish.

Practitioners of the fine bodily balancing act of hibernation and aestivation do their thing as a way of surviving daily or annual periods of cold, heat, and drought. At these times, when food supplies may also be meager, hibernation is a way of conserving energy by drastically slowing down normal body functions. In the face of adverse environmental conditions, it is an alternative to migration.

Of course, it is a trick for hibernators to synchronize their body slowdown to the vagaries of the weather. But an annual internal rhythm—sort of a biological clock—starts physiologically preparing them for hibernation, months ahead of time in many cases. Then external changes in such things as food availability, precipitation, air temperature, and daylight help fine-tune the proper internal adjustments for the actual plunge into hibernation.

Both cold-blooded and warm-blooded animals are capable of hibernation, but insects, invertebrates, reptiles, and amphibians, having no internal control over their own body temperature, are at the mercy of surrounding air temperatures. They must find suitable places to hole up before low temperatures make them too lethargic to move (this lethargy is appropriately called winter rigidity in cold-blooded critters) or before high temperatures dry them out like Egyptian mummies.

One October on a hill near Bozeman, which my family had hiked to for its stunning view, we found ourselves in the middle of some cold-blooded creatures in the actual process of holing up for hibernation. We'd all plopped down on a low pile of rocks at the very top of the bald rise when I was startled to see my kids crawling with ladybugs. Hundreds of the colorful insects were in our hair, under our shirts, freckling our faces. They'd gathered to hibernate under the rocks we were sitting on. We now look for them there every fall.

In a rather bizarre juxtaposition of body chemistry called hardening, insects prepare for cold weather by producing their own antifreeze and their own anti-antifreeze. Since ice formation within cells is harmful, bugs produce an ice-nucleating agent that allows ice formation in extracellular fluids at above normal freezing

temperatures. This, then, allows cells to lose water and reduces the chance of intracellular ice formation. Water that does remain within the cells is protected from freezing by the insects' own production of glycerol, a natural alcohol and an effective insect antifreeze.

Snails and earthworms also produce their own antifreeze for winter hibernation, but when hot weather threatens to desiccate their bodies they also aestivate. Worms curl up in a ball and secrete a mucous that lines their burrows and, when dry, helps slow further water loss. Still, they may lose up to 75% of their body water. They turn colorless and may not move for months.

But a snail with the catchy name of *Oxystyla capax* may hold the record in physiological patience for remaining in aestivation for a reported 23 years. Hibernating snails, like the garden snail, usually check out in September and get with it again around April. You may find dozens of them clustering together around shrub roots or old stone walls in an instinctive communal gathering in preparation for the big sleep. They seal the openings of their shells with a mucus that also glues them to the rock or the root on which they have happened to camp.

Speaking of communal gatherings, here's one that's enough to give you the willies and the heebie-jeebies all rolled into one. Rattlesnakes often slither together in the fall to den up in

AL DEMANGELAERE

JAN L. WASSINK

Some frogs, like the Pacific tree frog (right), need only hop under leaves or roots for protection against the cold. Freezing temperatures stimulate their livers to synthesize glucose, the self-made antifreeze that keeps their vital organs from turning to ice. Black bears (opposite page) rely on fat reserves to provide the little nourishment needed for their slowed metabolism during hibernation.

caves for a colossal six-month pajama party that may reach 1,000 rattlers all tangled together to help prevent heat loss.

Move over Alfred Hitchcock!

At least, when cold weather comes, you know that some of your not-so-favorite critters are tucked away in dreamland. This is also true of snapping turtles that burrow into the mud of underwater cutbanks to protect themselves against freezing.

The box turtle, on the other hand, is a land hibernator. It looks for loose soil that makes for easy digging and then starts clawing away the dirt. On the northern extremes of its range, a box turtle may have to scratch all the way down to five feet below the ground surface to be safe from frost. No wonder it then stays there for half the year.

When it comes to frogs, some are pretty cavalier about where they choose to hibernate, hopping only under some leaves or roots for protection against falling temperatures. Frogs are the only vertebrates that can actually survive being frozen, a discovery made recently when, in a fortuitous lapse in scientific protocol, a researcher left some specimens he'd collected in the trunk of his car on a cold day.

What he discovered from his blooper is that frogs—including wood frogs, tree frogs, and spring peepers—don't seem to have a body mechanism, like insects and most other hibernators, that anticipates and prepares them physiologically for hibernation. Instead, it is the freezing process itself that stimulates their livers to synthesize glucose, the self-made antifreeze that keeps their vital organs from turning to block ice.

Still, frogs can survive freezing up to 65% of their body water for several weeks at ambient temperatures as low as 15 degrees F. And they don't seem to mind repeated go-arounds of freezing and thawing. First, their extremities stiffen and extracellular ice forms under their skin. Then their abdominal cavity solidifies into a large chunk of ice. But their internal organs stay at the consistency of slush, thanks to the speedy self-production of the glucose antifreeze.

When the cold has done its job, the frog is stiff to the touch, it shows no sign of breathing, a heartbeat may be undetectable, and its aorta won't bleed if cut. Yet it still thaws out and hops about come spring. That's reducing body functions, even at the cellular level, to a bare minimum!

Frozen frogs coming to life. That's the stuff myths could be made of. In fact, one of my favorite myths connected with hibernation draws on the other end of the thermal spectrum to deal with salamanders springing full grown from the flames of fire. The myth originates from the Middle Ages when people tossed logs in which salamanders hibernated onto fires and then were flabbergasted to see these little critters hot-footing out of the flames.

Many old beliefs concern the hibernation of birds. In 1703, an Englishman wrote that "birds flew to the moon, taking 60 days to get there and that on arrival, finding no nourishment, they went into hibernation."

Samuel Johnson even got into the act, claiming that: "Swallows certainly sleep all the winter. A number of them conglobulate together by flying round and round, and then all in a heap throw themselves under water and lye in the bed of a river."

By the mid-1800s, however, the scientific community had pretty much pooh-poohed the idea that birds hibernate. Then on a chilly December day in 1946 in the Chuckwalla Mountains of California, Dr. Edmund C. Jaeger and some friends found what they thought was a dead poorwill tucked among the rocks. Then the bird blinked. And the good doctor was on his way to proving that some birds do, in fact, hibernate. The blinking poorwill returned to the same crack in the rocks for four years running, its normal temperature of 106 degrees F. dropping to 65 degrees F.

The Hopi Indians of that area could have told Dr. Jaeger of the poorwill's

DAN & CINDY HARTMAN

strange habit. They call the poorwill "the sleeper."

Other birds are sleepers too. Whip-poor-wills, nighthawks, swifts, willow tits, common redpolls. The rufous hummingbird often sinks into a controlled torpor at night to conserve energy and reduce weight loss while it is not feeding.

Birds, like mammals, are warm-blooded, and warm-blooded hibernators and aestivators are different from cold-blooded creatures in that they can control their body temperature. Although they normally maintain a relatively high and steady body temperature, during hibernation they can drop their temperature to within a few degrees above the freezing point of water in some cases.

The term deep hibernation is used to describe mammals whose body temperature usually drops below 50 degrees F. Torpor is used for animals that show a drop in body temperature to about 60 degrees F.

In either case, body metabolism slows drastically, but the animal has the ability to rewarm itself at any time by generating its own body heat as it arouses from the hibernating state.

The largest deep hibernators are the eastern woodchuck and the western marmot, or rockchuck. They, along with other deep hibernators like the ground squirrel, enter hibernation curled in a ball. Typically, their respiration rate drops first, followed by a drop in heart rate, and then a drop in body temperature.

The ground squirrel descends into hibernation, like a swimmer entering cold water, in a series of test "step-downs." Over a period of a week its temperature drops to a lower plateau every other day until it hovers around 42 degrees F.

Hibernation is not continuous but punctuated by arousals that are more frequent at the beginning and the end of the hibernation season. During these wakeful periods some animals, like hamsters, chow down on food stores they have cached away in their burrows. Other animals, like bears (who Indians thought gained sustenance during hibernation by sucking their feet because bears shed their keratinous foot pads during winter and then lick their tender soles), actually rely on fat reserves to provide the little nourishment necessary for their logy metabolism.

How logy can hibernators get? In the depths of deep hibernation a squirrel that normally breathes at a frantic rate of 200 breaths a minute takes only one or two breaths. And it slows its heart rate from as much as 400 beats a minute to around five. At times, breathing may stop altogether for up to an hour—a phenomenon called apnea. In this self-induced stupor, a squirrel can be tossed back and forth like a ball without waking. (The things researchers do for science!) But, at all times during hibernation, animals are hyperresponsive to internal and external stimuli and will automatically increase their metabolic rate and body temperature in the face of dangerously low ambient temperatures, even as they continue to hibernate.

Arousal from deep hibernation is a process that brings the hibernator groggily and grumpily awake. Muscular activity is a major source of heat production, and it involves violent shivering as breathing and heart rate and finally body temperature once again increase to normal.

And what makes it all happen? One researcher lays it on the line this way: "Very little is known about the physiological mechanisms that orchestrate these changes." Hormonal secretions in the pineal gland and pancreas are being studied, along with a "blood-borne substance" that may "trigger" hibernation. But the real nitty-gritty of hibernation and aestivation still remains one of nature's intriguing secrets. ■

Wildness Incarnate:

The Sandhill Crane

NATIVE AMERICAN AND AFRICAN DANCERS, Japanese Ainu, Australian Aborigines, and European ballet companies share a common choreographer. In fact, nearly every culture lucky enough to live among cranes has mimicked the birds in its dances and featured them in its myths. Spend some time in the company of cranes and you'll see why. In courtship they telegraph joy, while in flight, they flaunt a delicious freedom. Even in repose, sandhill cranes cut a royal figure, the kind that roosts in your memory for good.

For a few years, I went searching like a pilgrim for sandhill cranes, but they eluded me. That first year, pulling up to Nebraska's North Platte River too late in the season, I saw nothing but the shallow sloughs, and only my imagination could recreate the traffic jam of trumpet, wing beat, and stir caused by half a million birds in one place. I had missed the spring migration of the mid-continent population (which includes the lesser and Canadian sandhills that breed in eastern Montana) by only a few days.

Watchable Wildlife

After two more seasons of near misses, I moved to western Montana, where the sandhills finally found me. A friend and I were looking for a campsite in the Absaroka-Beartooth Wilderness, high atop a tussocked and potholed plateau in the very late twilight. Thankfully, sunset had lingered, and we could see a couple of waist-high greater sandhill cranes feasting on grasses, grains, and insects scared up in their scratching. We stood rubbing our eyes, wondering what would possess such giant birds to alight on such a high-altitude perch.

The following autumn, I was again visited by sandhills, this time only a few paces west of my home in the Bitterroot Valley. A chorus of insistent

by Janine M. Benyus

MIKE LOGAN

Fully inspired now, the cranes explode into the vertical leap display, the heart of the crane dancing. From a coiled crouch, each bird springs as high as 15 feet into the air, with its wings spread wide, its head held high, and its legs dangling in front for balance.

MIKE LOGAN

Nearly every culture lucky enough to live among cranes has mimicked their bounding, joyful dances.

garooo-a-a-a calls came rising from my pasture, floating towards two spiraling specks in the morning sky. The cranes were out there somewhere, but like true mythic creatures, they stayed hidden from our view. By this time, I had read up on sandhill crane behavior, and I could visualize what was happening in the tall grasses.

Most likely, the birds were part of the Rocky Mountain sandhill crane population, which tallies about 20,000 birds. The adults are impressive: as tall as a toddler, gray-brown with dark wing tips, white cheek patches, and ruby red crowns. The juveniles have a rusty brown head and neck, and have not yet grown their red cap. Males and females build large platform nests in remote wetlands ranging from northwestern Colorado through northeastern Utah, western Wyoming, eastern Idaho, western and south central Montana, and southwestern Alberta. They prefer river valleys, shallow marshes, wet meadows, or small islands, and here in Montana, they often take up residence at elevations above 4,000 feet. Important nesting areas include the Big Hole, Beaverhead, Jefferson, Gallatin, upper Missouri, Smith, Musselshell, Blackfoot, and Clark Fork river drainages, and the Centennial Valley.

In late summer and early autumn, you can see cranes "staging" (concentrating in flocks) before they wing their way south to more lucrative feeding grounds in New Mexico. Montana's largest staging area is along the Beaverhead River between Dillon and Twin Bridges. Beginning in mid-September, the birds stream south to Colorado's San Luis Valley, and by mid-November, most are on their way to the Rio Grande Valley of New Mexico. Perhaps the cranes in my pasture were fueling up before heading that way.

The call that we heard means "good feeding here"—it's a flag-down signal for members of the migrating flock that are still aloft. This plaintive trumpeting can carry up to two-thirds of a mile, thanks to the coiled French-horn-like

windpipes in the crane's throat. Location calls insure that the migrating flock remains together during rest stops. When it's time to take off again, the cranes stand erect, face into the wind, and signal their plans with a high-frequency flight intention call.

If our ground crew had been persuasive enough, we would have seen the pterodactyl soaring that cranes are known for. Like an airplane banking, the cranes simply tilt their seven-foot wingspan and spiral downward, getting larger and larger by the minute. They land dramatically, backstroking with their huge wings and touching down on spindly, landing-gear legs. If we'd witnessed a landing in our field, then crept closer with the help of binoculars or spotting scopes, there's no telling what we would have seen. Sandhills perform a repertoire of over 50 behaviors. Here are a few that you may be able to spot, divided into basic behaviors that individuals perform and social behaviors that emerge when cranes gather.

Basic Crane Behaviors to Watch For

If the sandhill you're watching is still a speck in the sky, grab your binoculars. You can tell an in-flight sandhill from a great blue heron by watching how they hold their neck. Unlike the heron's "S" shaped neck, cranes usually fly with their neck straight out like a spear and their legs outstretched behind them. For optimum soaring, they look for rising warm air currents called thermals. Hitching a ride up on these elevators, then gliding from one to the other, they can make light work of their transcontinental journeys.

Once a crane touches down, you may see it walking with a gait similar to ours or running with a slight bounce in its step. If it's running for a take-off, you'll see it flap its wings once or twice to keep balanced. Most of the time, however, cranes on a meadow will be strolling in search of their next meal. They stalk mice, lizards, frogs, or snakes, and probe with their bills to unearth rootlets and insects. In agricultural fields, they take advantage of grain or corn kernels left after harvest, while in natural meadows, they zero in on wild grains and berries.

After a meal, they may fly back to their roosting sites—preferably wetlands where they can stand in shallow water without worrying about land predators. Here, you'll see them meticulously combing their feathers into alignment with their beak and back slicking (waterproofing) with oil produced by a gland at the base of their tail. Sometimes, and no one is sure exactly why, sandhills will also paint their feathers rusty brown with a mixture of grass and mud. The best time to watch for this preening is between August and October, when molting feathers on the body, neck, and wings are being pushed out by new ones underneath. Once their flight feathers drop, the grounded cranes lie low, hiding in dense cover and preening for hours on end until they can fly again.

MICHAEL S. QUINTON

In addition to preening, you'll also see plenty of stretching—of wings and legs and neck and even jaws—especially when the birds first awake.

Social Crane Behaviors to Watch For

Communal Behaviors

Sandhills flock and roost together when migrating to make the most of a patchy food supply and to multiply their vigilance against predators. As soon as a suspicious character arrives, the birds assume the tall alert posture, standing rigidly erect with their necks straight up, their bills horizontal, their

MICHAEL S. QUINTON

During migration, feeding cranes (above) utter a plaintive trumpeting to signal "good feeding here" to birds still aloft (left).

AL TROTH

When eggs or chicks in the nest are threatened, either parent may perform a spread-wing distraction display to refocus the intruder's attention.

feathers sleeked, and their bodies nearly vertical. This contagious behavior spreads through the flock like a red alert, readying them for flight or fight. If you are causing this response, you're too close, and may be inadvertently bankrupting the cranes' energy. By comparison, when you're at a safe distance, the sandhills will notice you with curiosity, but not alarm. In this non-contagious alert investigative posture, they'll stand with their bodies either horizontal or vertical, and their heads scanning back and forth.

Conflict Behavior

You're most likely to see squabbles (mostly consisting of blustery threats) just before breeding season, when mating pairs are establishing territories. Outside of breeding time, when cranes are back together in flocks, you may also catch them raising their hackles over questions of dominance.

Some threat displays are not directed at a target per se, but broadcast as a general warning to all would-be enemies. Cranes sometimes perform the low bow when flying into the midst of a flock or when landing next to an intruder in their territory. The bird bends its neck steeply downward and tilts its lowered head so its bright red crown is plainly visible. By contracting or relaxing its muscles, the crane can control how much of this red skin area is exposed and how engorged, and thus red, it is. The ruffle bow is similar to the low bow except that the crane shakes its feathers as it bows. A third type of nondirectional display used to defend a territory is the bill-up unison call, a call that you'll also hear in courtship.

The mellowest sign of one-on-one defense is the directed walk threat. The displaying crane parades around the offending party with its head angled downward, its crown expanded, and its flight feathers raised in a vertical fan shape. It steps stiffly, carefully placing each leg, pumping its head, and showing off its engorged crown. As a finale, the crane may lower its head with a growl and touch its leg or flank in a mock preening movement.

The next step in aggressiveness is the head-lowered charge, in which the crane clamps its wings tight to its sides, extends its neck, and runs towards its opponent, bill aimed like a jousting lance. If the opponent doesn't retreat quickly enough, the charger won't hesitate to nip its wing or pluck some feathers. The charge may also turn into an aerial pursuit, in which the aggressor kicks at the fleeing bird with its feet.

When a dominant bird wants access to a drinking or feeding spot, it may aim at the other crane with a bill stab—a frozen version of head-lowered charge, without the running. If the subordinate knows what's good for it, it will move aside and act properly submissive.

When a crane wants to "cry uncle," it lowers its posture and tries to make itself and its bright crown as inconspicuous as possible. In the neck-retracted submissive posture, the bird holds its body horizontal, pulls its neck back, and loosely folds its wings. In striking contrast to the dominant's stiff gait and enlarged crown, the submissive bird walks in a loose-jointed fashion and keeps a low crown profile.

What happens when two cranes meet, and neither one submits? Bill sparring contests usually occur when a resource such as fresh water is limited or when pair formation is in progress. These brief but important duels allow male rivals to show their stuff and win a place in the pecking order. Once rankings are set, the birds can resolve their conflicts with just a subtle show of crown or stiffness of step.

The sparring begins with some face-to-face bill jabbing. Next, with their wings spread wide and their upraised bill tips almost touching, the cranes vault into the air and kick at one another. These kicks rarely log any serious injuries, however, since one bird usually retreats or backs down. As if to get the last word, the dominant may end the sparring episode with a bill stab, a head-lowered charge, or a low bow.

By the way, these threats and sparring behaviors are also reserved for invaders, such as foxes, dogs, or even a human that gets too close. If a sandhill begins to threaten you, you're much too close.

Breeding Behavior

When cranes leave their parents, they travel with a flock of other

HARRY ENGELS

Cranes build their dishlike nests in wide, lonely wetlands filled with sedges, cattails, or bog plants. Three to five feet in diameter, the nests are usually perched safely above floodline on a mound of dead reeds and rushes.

juveniles for two to three years. It is here that they find their lifelong mates. Their courtship is filled with intricate displays and joyous dancing, all designed to cement the cranes' bond and synchronize their sexual time clocks.

Though it usually functions as a territorial defense, the unison call, a duet, is also used to form and strengthen the bond between mates. The birds stand side by side, and as they sing, the female keeps her bill horizontal while the male tilts his straight up. Typically, the female utters the first note, touching off a series of long, pulsed, staccato calls that alternate between male and female.

Three attraction-getting displays are part of the springing, whirling dance that cranes are known for. In the upright wing-stretch display, the male raises his wings while walking in full alert posture in front of the female. In the horizontal head pump, both male and female spread their wings and bring their heads down to the ground and back up again, several times in a row. Occasionally they'll try a vertical toss, grabbing a stick or piece of vegetation and flinging it into the air.

In the bow display, the birds pop up and down like ballet dancers warming up at the barre. Beginning in a crouch, each bird tilts its body forward and extends or lifts its wings. Suddenly, it stands up, extends its neck for a moment, then crouches again. Between bows, each crane may take a surprise jump.

Fully inspired now, the cranes explode into the vertical leap display, the heart of the crane dancing. From a coiled crouch, each bird springs as high as 15 feet into the air, with its wings spread wide, its head held high, and its legs dangling in front for balance. Watch for a few wing flaps before the crane floats back to earth. One leaper often inspires the others, until the entire flock is bounding like birds on a trampoline. The enthusiasm that fills the dancing flock is contagious, and as you will see, it can easily sweep away human hearts as well.

Luckily, breeding season is not the only time you'll have a chance to see dancing. Young cranes dance to develop motor skills, submissive cranes dance to thwart a dominant's aggression, threatened cranes dance when they're nervous, and some cranes just dance because they feel like it.

After the formalities, either sex may initiate mating. The male signals with a parade march, walking up to the female with his flight feathers erect, his bill jutting straight up to the sky, and his crown bright red as in "ready." The female postures in much the same way, holding out drooping wings and purring the pre-copulatory call. Finally, the male lowers his bill and leaps onto the female's back, flapping his wings to maintain his balance. After a brief mating, he dismounts by stepping backward or by hopping over the female's head. Before parting, the couple stands side by side with their crowns expanded and their bills pointed

MICHAEL S. QUINTON

Crane chicks are covered with down and able to leave the nest within hours of hatching.

skyward. In slow and perfect unison, they may perform a low bow display or a ruffle bow. To wind down, they may preen or engage in a little celebratory dancing. After watching this incredible spectacle, you may feel like dancing yourself!

Parenting Behavior

Cranes build their three- to five-foot-diameter nests in wide, lonely wetlands filled with sedges, cattails, or bog plants. The dishlike nests are usually perched safely above floodline on a mound of sticks, mosses, dead reeds, and rushes. Cranes utter a low moaning nesting call as they build a nest and again while incubating their one or two eggs.

A mere two or three days after hatching, precocious crane chicks are strong enough to follow their parents to feeding grounds where they try their hand at stalking and probing. Until their accuracy improves, you'll no doubt hear their peeping food-begging call or see the parents and chicks bill touching, a sign that food is being begged or delivered. Thanks to the steady stream of handouts, the gangly juveniles are able to grow large enough in three months to join the flock for the long migration back to their winter haunts.

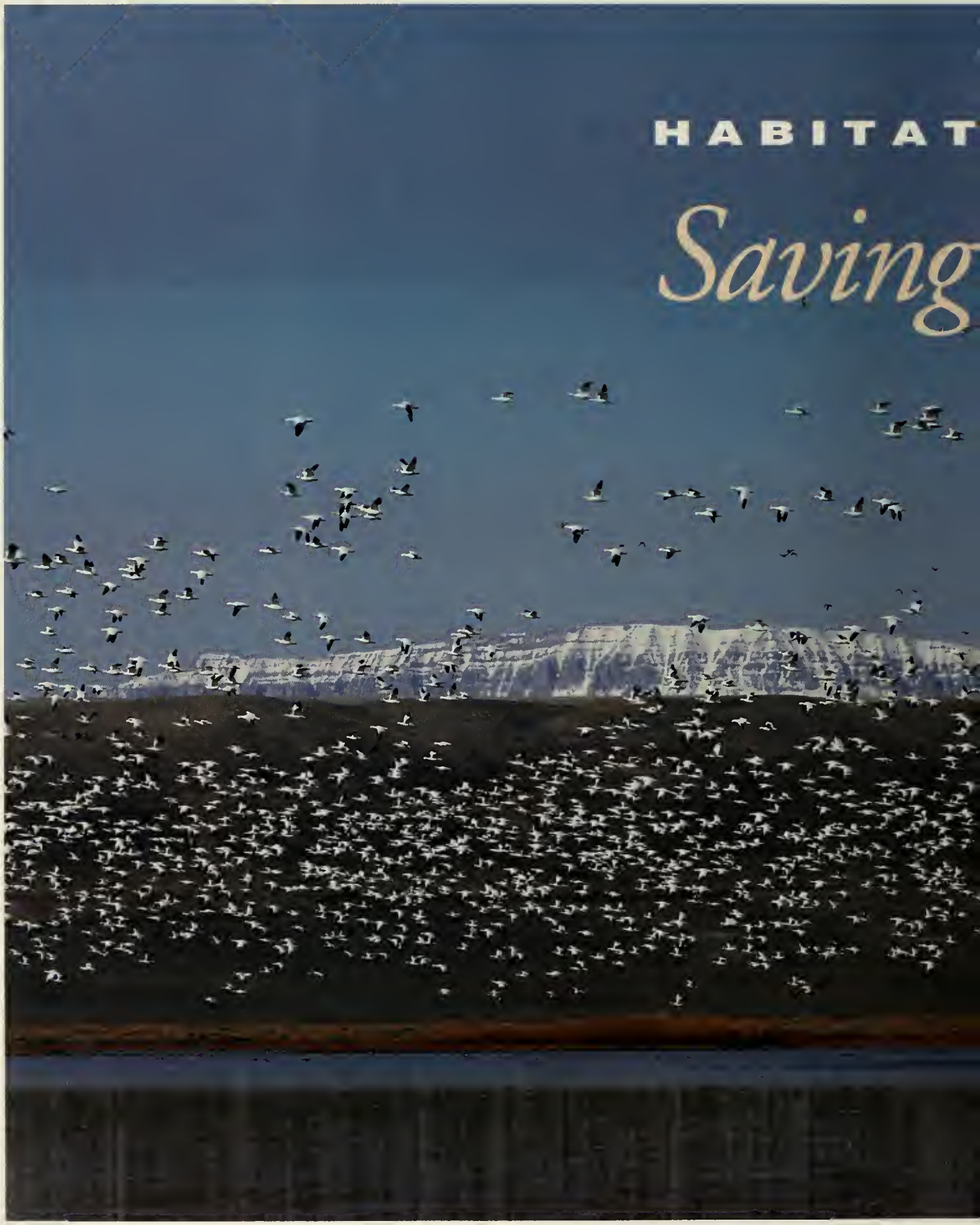
Besides dishing out dinner, crane parents are also kept busy on predator-mobbing patrol. Working as a team, the pair surrounds intruders and barks out loud single-syllable guard calls until they retreat. If eggs or chicks are in the nest, either parent may perform a spread-wing distraction display to refocus the enemy's attention.

To reassure their parents, sandhill chicks purr contact calls while foraging, playing, or being brooded. Should a chick become separated, chilled, or hungry, it summons its parents with a loud, unbroken stress call. If you hear this call, make sure you're not standing between the mother and her chicks. If so, move quickly away so the mother doesn't have to waste energy in an elaborate defense.

Status

Here in Montana, Fish, Wildlife, & Parks surveys in 1992 indicated a population of 4,000 to 5,000 greater sandhill cranes, a healthy increase over the last 20 years. That number will grow as more birds are born here and then return to repeat the cycle. Despite the good news in Big Sky Country, all is not well on the birds' wintering grounds in the Rio Grande Valley of New Mexico. Mid-valley, crane habitat is being swallowed by suburbia and dewatered by irrigators. Roosting wetlands are in limited supply, and new crop rotation practices are reducing the acres of cereal grains that once supplemented crane diets. At the same time, alfalfa farmers on surrounding private land are complaining that swelling flocks of hungry sandhills and snow geese are devouring profits. Biologists are also concerned about the sheer numbers of geese and cranes; with so much of the population in one place at one time, a storm, disease outbreak, toxic chemical spill, or other environmental accident could spell major tragedy.

Because cranes are slow breeders—raising an average of less than one chick per pair per year—significant dieoffs that occur on the wintering grounds will not be easily recouped. No matter how fertile habitat conditions may be in Montana, we can't ensure sandhill crane survival unless we protect and create quality habitat in all portions of their range. The alternative is a world with fewer *garooo-a-a-a* calls, a little less dancing, and a lot less magic. ■


HABITAT
Saving

DAVE BOOKS

the Best of the Rest

HUDDLED AGAINST A COLD NOVEMBER DAWN on one of the dikes that transect Freezout Lake Wildlife Management Area (WMA) near Fairfield, one can hear an uneasiness growing among the ducks and geese rafted near the heart of the main lake. What begins as idle chatter intensifies as the eastern horizon glows and the hills beyond Freezout begin to take form. Then, as if in a massive marathon start signaled by a silent shot, the lake jumps skyward on white and mottled wings and the air fills with the exclamations of rising waterfowl. In contrast to the nearby Sun River WMA on the Rocky Mountain Front—a winter home for thousands of elk where all you may hear on a November day is the rattle of cottonwood leaves in the breeze or the hush of a high country snowfall—Freezout is not a quiet place in the fall.

by WILLIAM PHIPPEN

DENVER A. BRYAN

And that's as it should be. Montana's more than 60 WMAs, encompassing approximately 260,000 acres, offer a diversity of wildlife habitats as varied as any in the Rocky Mountains and as valuable to Montanans and all Americans as any in the nation.

If you are a hunter, or if you simply enjoy the beauty many species of wildlife bring to our landscape, you can appreciate the importance of good, productive wildlife habitat. In Montana, as elsewhere, it is the availability of such land that dictates the presence and health of wildlife populations.

As Montana's human population continues to grow and traditional land uses inevitably change, the welfare of wildlife—from elk and deer and bears to upland gamebirds and waterfowl—will take on even greater importance.

"There's a growing concern about the increased rate at which valuable wildlife habitats are being lost to changing land uses," says Jeff Herbert, a wildlife biologist who serves as statewide waterfowl coordinator for Montana Fish, Wildlife & Parks. "In the past two decades, especially, we've seen an influx of people moving into what have been important areas of big game winter range and creek bottom habitats. At the same time, we've seen conversion of native grasslands to intensively farmed croplands and other developments that have removed these lands from the habitat base. For the future welfare of our many species of wildlife, we will need to look toward conserving habitat whenever we can."

It was with this understanding that sportsmen's groups, conservation organizations, and others urged the 1987 Montana Legislature to pass House Bill 526, a landmark conservation law setting aside a portion of hunting license revenues for acquisition of important and threatened wildlife habitats. HB 526 extends habitat protection to all forms of wildlife, not just game animals, and encourages use of conservation easements and leases as preferred alternatives to fee title acquisition.

In the seven years since the bill's passage, FWP has spent $9.5 million to conserve 112,000 acres of habitat. Approximately 60% of the acres acquired have been through leases and conservation easements.

Most Montanans recognize the important accomplishments that have been realized through purchase and enhancement of wildlife management areas. Many people are also aware that some of these lands continue to provide for traditional uses, such as domestic livestock grazing and farming under sharecrop agreements, and that WMA managers work with

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Montana's wildlife—from owls to antelope and elk to pheasants—need a variety of productive habitats. A program called "Habitat Montana" will guide FWP's land acquisition policies into the next century. Opposite page photos (clockwise from top): antelope—Dave Bennett; *elk hunter*—Donald M. Jones; *bighorn lambs*—Bill McRae; *mule deer*—Denver A. Bryan; *great gray owls*—Scott McKinley; *Canada geese*—Denver A. Bryan; *beaver*—Erwin & Peggy Bauer; *Hungarian partridge*—Keith A. Szafranski.

adjoining landowners to minimize game damage on private land. Fewer people may realize that fees in lieu of taxes are paid on WMAs commensurate with what would be paid to counties if the land were in private ownership, and that FWP land purchases are subject to detailed environmental review and public comment, as well as approval by the State Land Board.

Yet, the subject of FWP land ownership has always been controversial, and the ongoing debate eventually highlighted the need for an overall policy and plan to guide the department and the Fish, Wildlife & Parks Commission in making the best decisions possible concerning wildlife habitat needs in the state.

With this in mind, the 1991 Legislature enacted Senate Bill 252, which directed FWP to: (1) conduct an objective and comprehensive evaluation of its wildlife habitat programs; (2) develop a comprehensive plan for a permanent wildlife habitat protection program; (3) ensure public participation in the development of the comprehensive plan; and (4) report the results of the study to the 1993 Legislature.

FWP commissioned Canyon Consulting of Missoula, an independent contractor, to conduct the study and determine Montanans' views on wildlife habitat needs. Following a number of meetings attended by members of the agricultural community, sporting groups, conservation organizations, local businesses, and government agencies, and with input from a survey of 3,900 Montanans, FWP reported its findings to the 1993 Legislature and developed a schedule for implementing a new, comprehensive acquisition program.

This program, called "Habitat Montana," is expected to be adopted in final form by the Fish, Wildlife & Parks Commission this fall. The draft policy establishes the following as benefits of the program:

- Conservation and enhancement of land, water, and wildlife.
- Improved hunting and fishing opportunities.
- Incentives for habitat conservation on private land.
- Nonhunting recreational opportunities.
- Protection of open space and scenic areas.
- Maintenance of the local tax base, through payments in lieu of taxes for real estate, while demonstrating that productive wildlife habitat is compatible with agriculture and other land uses.

The policy will apply not only to lands acquired through HB 526, but lands purchased through other FWP programs like the state waterfowl stamp program and the bighorn sheep and moose license auctions. It also will guide acquisitions made possible through mitigation funds, such as those received from the Bonneville Power Administration. To date, few waterfowl stamp and sheep and moose auction license funds have been used for land acquisition; almost all of these revenues have been spent on habitat enhancement.

According to Steve Knapp, habitat bureau chief for FWP's Wildlife Division in Helena, biologists are already in the process of identifying important wildlife habitats across the state. He explained that these efforts are focusing on the sagebrush-grassland, riparian (streamside), and intermountain-grassland habitat types, since these types are in greatest jeopardy. Twelve projects are now underway in which FWP will eventually employ conservation easements, leases, purchase, or management agreements to secure lands where, as mandated by HB 526, "important habitat is seriously threatened." Knapp noted that the public will be kept informed and will have opportunities to comment as these projects progress.

Habitat Montana is as much a way of thinking as it is a way of doing business. It is based on the belief that conserving a variety of quality habitats for wildlife can help preserve Montana's rich wildlife heritage and help maintain our way of life. For if the great autumn flocks of ducks and geese no longer awaken residents of the north-central Montana plains, and if Sun River elk no longer gather on mountain foothills blown bare by March winds, Montanans from all walks of life will be poorer. ■

Biologists are in the process of identifying important habitats across the state, especially those in greatest jeopardy from population pressures and land use changes.

HARRY ENGLES

OUT of the ASHES

Beartooth Wildlife Management Area

LANDS LEGACY

by BRUCE AUCHLY and JIM WILLIAMS

RODNEY SCHLECHT

The crucible that transformed the Beartooth Wildlife Management Area (WMA) began the evening of November 13, 1990. A cigarette tossed carelessly in one spot, a spark from a cook stove elsewhere, led to a two-day fire that burned nearly 80% of the Beartooth's 32,318 acres.

Quick action by firefighters saved the buildings at the Montana Fish, Wildlife & Parks WMA. Many hunter's camps were not so lucky.

"We lost everything," says Ron Ries of Conrad, "rifles, tents, sleeping bags. I mean everything."

Before the fire, the Beartooth was in danger of being loved to death: In the fall, too many hunters on opening day chased elk onto neighboring private land. Success rates were low, but the party atmosphere ranked high. In the summer, vacationers at adjacent Holter Lake camped at the Beartooth and took water from FWP buildings for their use and commercial purposes.

Since the fire, like the fabled phoenix of mythology, the Beartooth has claimed a new, vigorous, productive life. Now, changing vegetation, new travel restrictions, and a permit-only system during the general rifle season have set up a scenario for an elk herd with a diverse age structure, from spikes to six-point mature bulls.

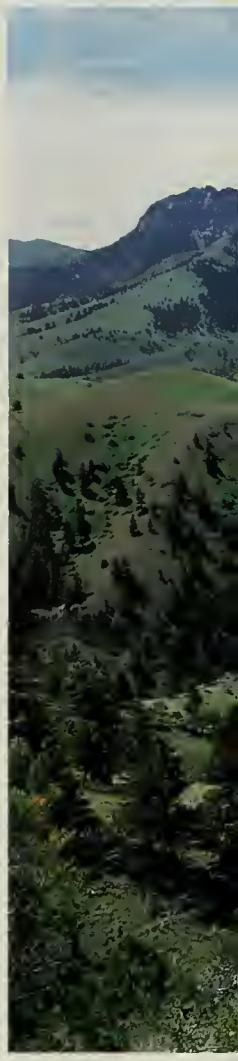
And not just elk—mule deer are coming back in a corresponding type of recovery.

Ries is back at the Beartooth, as well. "I've used it ever since it was purchased [in 1970]. Every single year but one."

The Beartooth, however, is more than just a hunting paradise. Jerry Mayala, who works for FWP at the Beartooth, can attest to the area's popularity other than during the hunting season. "I counted 200 vehicles a week using the Beartooth this summer," Mayala says. "People enjoy the scenery and quiet. They hike and camp here."

Trail riders from central Montana also use the area extensively. "It's a good area to ride," says Bill Austin, president of the Backcountry Horsemen chapter in Great Falls. "There's a lot of elk you can photograph or track or

DAN & CINDY HARTMAN



Since the wildfire that burned 80% of its acres in 1990, the Beartooth WMA has claimed a new, vigorous life. Vegetative renewal and significant management changes have led to improved elk, mule deer (below), and bighorn sheep (left) populations. Cottonwood Creek (right), one of the Beartooth's three main drainages, empties into the Missouri River at the area's western boundary.

practice your bugling on."

Indeed, a major attraction at the Beartooth is the resident elk herd. Many of the department's WMAs are important because they offer significant elk wintering range. The Beartooth also has a summer herd of 400 to 600 elk.

Besides elk, all the state's big game animals live on or visit the Beartooth during the year: moose, mule deer, antelope, white-tailed deer, mountain lion, black bear, bighorn sheep, and mountain goat. Large raptors like peregrine falcons, ospreys, and bald eagles can be sighted on the Beartooth at certain times of year.

Current wildlife projects on the WMA include restoring the area's bighorn sheep herd and monitoring migratory songbirds, referred to as neotropical migrants.

Nestled in the north end of the Big Belt Mountains, the WMA's name comes from Beartooth Mountain, across Holter Lake on the Missouri River, which forms the property's western boundary. From the water, the Beartooth heads east 12 miles, rising 3,500 feet to reach Shellrock ridge at 7,000 feet. To the south sits the 28,500-acre Gates of the Mountains Wilderness. Three main drainages—Willow, Elkhorn, and Cottonwood creeks—slice through the WMA.

Pictographs indicate the region was used by nomadic Indians. The first written records of the area (as with much of the Missouri River country in Montana) came from the Lewis and Clark Expedition. The explorers passed the Beartooth in July of 1805. In their journals, they mentioned seeing "big-horned animals on the immensely high and perpendicular cliff opposite to us." Just south of the Beartooth, the spectacular cliffs pinch the river into a narrow gorge, which Capt. Meriwether Lewis called "gates of the rocky mountains."

Early ownership of the Beartooth, beginning in the 1870s, involved a crazy quilt of railroads, homesteaders, and a predecessor of Montana Power. Consolidation of the various parcels began to take shape in the early 20th century, with land sometimes changing hands for less than $1 an acre. Cattle and sheep ranching were the main concerns. A succession of owners up to the mid-1950s bought and added land. Older residents will recall names like

JOHN R. FORD

RODNEY SCHLECHT

Staunton, McGregor, Burleigh, Bryan, Ives, and Milton.

In 1957, M. Pierce Milton became the final pre-WMA owner. Shortly after his death, The Nature Conservancy stepped in, bought the land, and sold it to the department in 1970. The deed stipulates that the area be used "only in accordance with sound game management practices ... [and] the mountainous portions of the Preserve shall be held inviolate as far as intensive recreational developments are concerned."

With FWP ownership, the Beartooth quickly became a spot for every hunter on opening day. "There were always elk there the first couple of days," Ries recalls. "And enough people to keep moving them around."

Too many people. After opening weekend, few elk remained. Hundreds headed to adjacent private land, creating problems for the landowners, who had to deal with wildlife and hunters. Following the season, in the dead of winter, perhaps 1,250 elk could be found on the Beartooth. Come spring, the elk would head back to private land, often competing with livestock for forage.

About one year before the fire, a group of landowners, outfitters, sportsmen, and agency people began meeting regularly to address the problems. The organization became known as the Devil's Kitchen Management Team, after a local term for the area's rough country. Reforms and solutions were being discussed shortly before the 1990 fire.

"Change was in the wind that fanned the fire," says Graham Taylor, regional wildlife manager. "In a sense, the fire came at an opportune time. We had mutual needs to be addressed immediately."

First came the aerial seeding of 4,200 acres of the most severely burned timber stands. Workers also installed 165 straw-bale structures to stop sediment from washing off bare hillsides in the spring into Elkhorn and Cottonwood creeks.

Next came new travel and camping restrictions. Only walking or horseback riding, and no camping, are allowed in the Cottonwood Creek drainage, the closest to adjacent private lands. To the south, along Elkhorn Creek, non-motorized wheeled vehicles (mountain bikes) may join backpackers and horseback riders. In the Willow Creek drainage, the closest to federal land south of the Beartooth, motor vehicles are allowed on authorized roads during hunting season. In summer, no amenities, including potable water, are available anywhere on the WMA.

Finally came the constraint that many hunters initially would not accept: permit-only hunting during the general rifle

season on the Beartooth. Before the fire, regulations called for antlerless elk permits and open hunting for any bull elk. Upwards of 2,000 hunters would descend on the WMA during the five-week elk season.

After the fire, FWP regulations limited elk hunting to 750 either-sex permits. Department biologists predicted better hunting for more people, more elk taken by hunters, and animals remaining on the game range during the entire season. Many hunters were skeptical. "I fought it tooth and nail," says Ries. "I lobbied and protested and fought. But they were right. Maybe I shouldn't tell them that. Elk are there and are kept on the game range. I didn't think it was possible."

From 1979 to 1988, thousands of hunters each year averaged 131 elk. Starting in 1991, several hundred permit holders annually have taken 225, 291, and 279 elk. Biologists, however, don't expect those recent numbers to continue. They should moderate eventually.

To further benefit elk, FWP in 1992 entered into a grazing agreement with the Sieben Live Stock Company. The arrangement combines 5,000 acres on the eastern edge of the Beartooth with nearly 16,000 acres of Sieben property in a three-pasture, rest-rotation system.

Used at several state WMAs, the grazing system puts cattle on one pasture beginning May 1, and opens a second pasture in mid-July after certain grasses have gone to seed. The third pasture remains ungrazed for a growing season. In a full three-year cycle, each pasture is rested, grazed heavily, and grazed moderately after the grasses have seeded. Each year, two pastures are rested during the growing season.

"The livestock operator, sportsman, and elk all benefit from improved range condition and forage production," Taylor says. Department counts place 1,500 wintering elk on the Beartooth. Many elk remain there year-round.

One day this summer, Beartooth caretaker Jerry Mayala saw about 300 cow elk in a meadow, along with some immature bulls. "Just above the large grazing group of elk on a steep, rocky ridge, five six-point bulls in velvet emerged from some limber pine," he says. "One bull had antler tips that appeared to touch his back as he looked my way."

What does a dynamic Beartooth WMA mean to the hunter? "It's the experience," Ries says, reflecting on more than 20 years of hunting in one spot. "Getting an elk is just a bonus. We really value the years we've been able to spend there." ■

RODNEY SCHLECHT

The primary goal of the Beartooth WMA is to provide wildlife habitat and recreational opportunites.

Beartooth Wildlife Management Area

Location: In Lewis and Clark and Cascade counties about 30 miles north of Helena and 80 miles south of Great Falls.
Size: 32,318 acres.
Acquisition date: 1970.
Access: Exit I-15 at Wolf Creek and take the Missouri River Road east to Wolf Creek Bridge; turn south on Beartooth Road, which runs along the east side of the Missouri River and Holter Lake, and follow signs to the WMA.
Management goal: To provide wildlife habitat for a variety of species, primarily elk, and to provide recreational opportunities.
Hunting opportunities: Permit-only rifle seasons for deer, elk, and antelope are open to licensed hunters. Limited opportunities exist for upland gamebirds.
Wildlife viewing: All of Montana's big game animals live on or visit the WMA at various times. Upland gamebirds, songbirds, raptors, furbearers, and numerous small mammals can be found through much of the year. The WMA is closed to all visitation from the end of the big game hunting season until May 15 each year.

Tracking THE TRAVELERS

by JEFF HERBERT

SMILING, I REMEMBERED the old duck hunter's observation. "You shouldn't get serious about duck hunting until those red-legged northern mallards show up late in the season," he had told me. Why, might you ask, should that generate a smile on a hot August afternoon on the edge of Lake Helena? Well, we had just banded an adult drake mallard captured in a swim-in bait trap whose legs and feet were about as deep red-orange as they could be. And we were still six weeks away from the opening of waterfowl season and about 10 weeks away from the arrival of northern migrants.

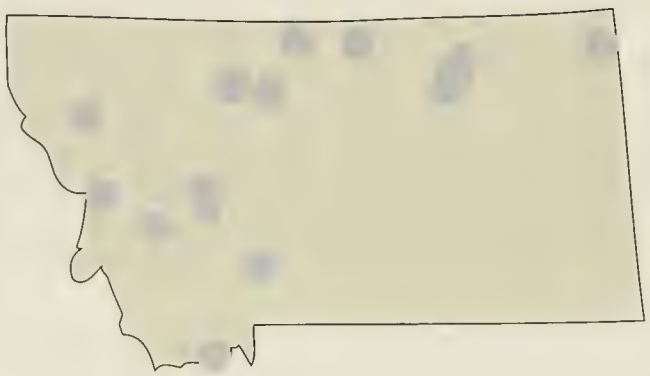
In fact, this Lake Helena duck would soon complete the molt of his head feathers, add his two curly central tail feathers, and look for all the world just like the "northerns" so prized by many waterfowl hunters. His whereabouts, documented by recovery or reobservation of his leg band during the hunting season or possibly the following summer, could help settle some of the coffee table discussions that are so much a

DAVE BOOKS

DAVE BOOKS

Through banding studies, biologists are unraveling the mysteries of waterfowl migration.

Since 1991, waterfowl biologists have banded thousands of ducks in the western United States and Canada in an effort to learn more about the birds' movements between northern breeding areas, fall staging areas, and wintering grounds. Last year, almost 7,000 ducks—primarily "dabblers" like mallards and teal (far right photos)—were banded in Montana as part of this program.



MALLARD BANDING LOCATIONS IN MONTANA

MALLARD BAND RECOVERY LOCATIONS
(lines connect banding and recovery sites)

part of hunting lore.

Banding of birds was first attempted in North America by John James Audubon in 1803 when he leg-banded a brood of phoebes and then recaptured two of the birds the following year. The American Bird Banding Association was organized in 1909; its records and banding program became the responsibility of the U.S. Bureau of Biological Survey (later to become the U.S. Fish and Wildlife Service) in 1920.

In 1915, Wells W. Cooke, a Biological Survey biologist, compiled and published his observations on bird migration routes. While his assessments were accurate, Cooke lacked data to substantiate his observations. Soon after, Frederick Lincoln developed a waterlily-leaf trap for waterfowl and, in the most intensive duck banding effort to date, banded 2,000 ducks along the Illinois River. By 1930, using band recovery information for ducks and geese, Lincoln developed the flyway concept and outlined the four geographic flyways.

Today, the bird banding program in North America is a cooperative effort among government agencies, private organizations, and individuals. Waterfowl banding is coordinated by the U.S. Fish and Wildlife Service (USFWS) and the Canadian Wildlife Service. The USFWS's Office of Migratory Bird Management and the new National Biological Survey's Bird Banding Laboratory provide operational oversight of the program. Various states, through the flyway councils, have participated in development of new banding plans and committed resources to meet their objectives.

This "catch and release" form of duck hunting provides the basis for unraveling questions about waterfowl migrations between northern breeding areas, fall staging areas, and the principal wintering grounds. It has become an integral part of waterfowl management as we know it today. Within the Pacific and Central Flyways, ongoing waterfowl banding efforts include the following:

- Pre- and post-hunting season banding of mallards in the north-central U.S. and prairie Canada.
- Extensive banding of Canada goose populations.
- Marking of Arctic-nesting snow and Ross' geese.
- Capture and marking of harlequin ducks on western Montana breeding grounds.
- Neck-collaring of translocated trumpeter swans.

Drive trapping, swim-in bait traps, rocket nets, night lighting, and mist netting are some of the techniques used by biologists to capture waterfowl for banding. Aluminum leg bands, plastic neck collars, or nasal saddles are used to identify individual birds. Mosquitoes, marsh muck, and hot August days round out the picture for most summer banding expeditions.

Information generated by band recovery data has been used in combination with population and harvest numbers to shed light on the life history, population status, and ecology of many species. It is important in pinpointing fidelity to specific wetland basins for breeding, brood rearing, or molting, and in documenting harvest patterns of waterfowl produced in specific areas.

Managing this database is a formidable job, and requires

BLUE-WINGED AND CINNAMON TEAL BAND RECOVERY LOCATIONS
(lines connect banding and recovery sites)

DAVE BOOKS

DONALD M. JONES

extensive computer capabilities. This task falls on the shoulders of the Bird Banding Laboratory, whose personnel are understandably finicky when it comes to requiring that banding schedules from field biologists be correctly and clearly filled out. Amazingly enough, considering the size of the database, most hunters or birdwatching enthusiasts who report band recoveries receive accurate information on where and when the bird was banded. This information is contained in a certificate of appreciation mailed to each person who submits a band recovery report.

In 1991, Pacific Flyway biologists initiated a duck banding project for the western United States and Canadian provinces. The five-year cooperative project is intended to gather information primarily on mallards, pintails, and other species of "dabbling" ducks from this large geographic area where historic banding information has been scarce. The effort concentrates on summer bandings, with the objective of marking samples of young and adult ducks from specific geographic units designated as banding reference areas.

Based on the need for adequate statistical samples, these reference areas were assigned banding quotas for each age and sex class of mallards. For example, Montana was divided into three reference areas, two in the Pacific and one in the Central Flyway. Banding quotas for these units varied from 200 to 600 ducks for each age and sex class (e.g., 200 adult drake mallards and 200 immature drake mallards). Additional reference areas stretch from Alaska, the Yukon, and Northwest Territories down through British Columbia and Alberta, south into the western states, terminating in California.

Federal, state, tribal, and university personnel, with assistance from many private individuals, have worked hard to meet banding quotas for Montana. Banding locations in the Pacific Flyway portion of the state include the Ninepipe area, Metcalf National Wildlife Refuge (NWR), Warm Springs Wildlife Management Area (WMA), Red Rock Lakes NWR, Canyon Ferry WMA, Lake Helena WMA, Benton Lakes NWR, Freezout Lake WMA, Sands Lake Waterfowl Production Area, and the Chain of Lakes (Havre area). Banding efforts in south Phillips County (Malta), Bowdoin NWR, and Medicine Lake NWR have also contributed to the program. In 1993, 6,723 ducks were banded statewide, and more than 45,500 mallards were banded throughout the Pacific Flyway.

Band recovery data from these ducks is providing useful and interesting insights into the habits of waterfowl and waterfowl hunters in this broad geographic area, and helping biologists gauge the effects of hunting regulations on various segments of the waterfowl population. Some of the information from this and other banding studies is summarized below:

• Approximately 32% of recovered bands are reported. A recent study showed that this ratio of recovered to reported bands has not changed over time. This is especially critical when comparing survival and harvest rates of migratory birds based on band recovery data between different time periods.

• Across North America, recovery rates for ducks banded

MICHAEL J BARLOW

Waterfowl hunters can help biologists track duck migrations and gauge the effects of hunting regulations by reporting band numbers to the nearest U.S. Fish and Wildlife Service or Montana Fish, Wildlife & Parks office.

during the summer of 1993 and recovered during the 1993-94 hunting season averaged 4% for adult drake mallards and 2% for adult hen mallards. Pintail recovery rates were less than 1%. Multiplying these recovery rates by three gives estimated harvest rates of 12, 6, and 3%, respectively.

• Forty percent of Pacific Flyway band recoveries from mallards banded in Montana during 1990-92 occurred in Montana. Mallards produced in western Montana are important to hunters in Idaho, California, Utah, and Washington.

• Computer-generated maps of band recovery distribution (pages 24 and 25) illustrate the importance of the Montana breeding grounds to the various flyways. In fact, the map for mallard recoveries graphically depicts the separation of the Pacific and Central Flyways within the state and the migration corridors for mallards raised in the western and eastern portions of Montana.

DAVE BOOKS

• Band recoveries from blue-winged and cinnamon teal (see map) show a strong tie to Texas, Louisiana, and Mexico. Teal banded in Montana during July and August have been recovered in Texas in early September.

• Based on numbers of ducks banded in north-central Montana and harvested in Colorado, Colorado Ducks Unlimited provided Montana $100,000 from its state duck stamp program for wetland enhancement work in Phillips and Blaine counties.

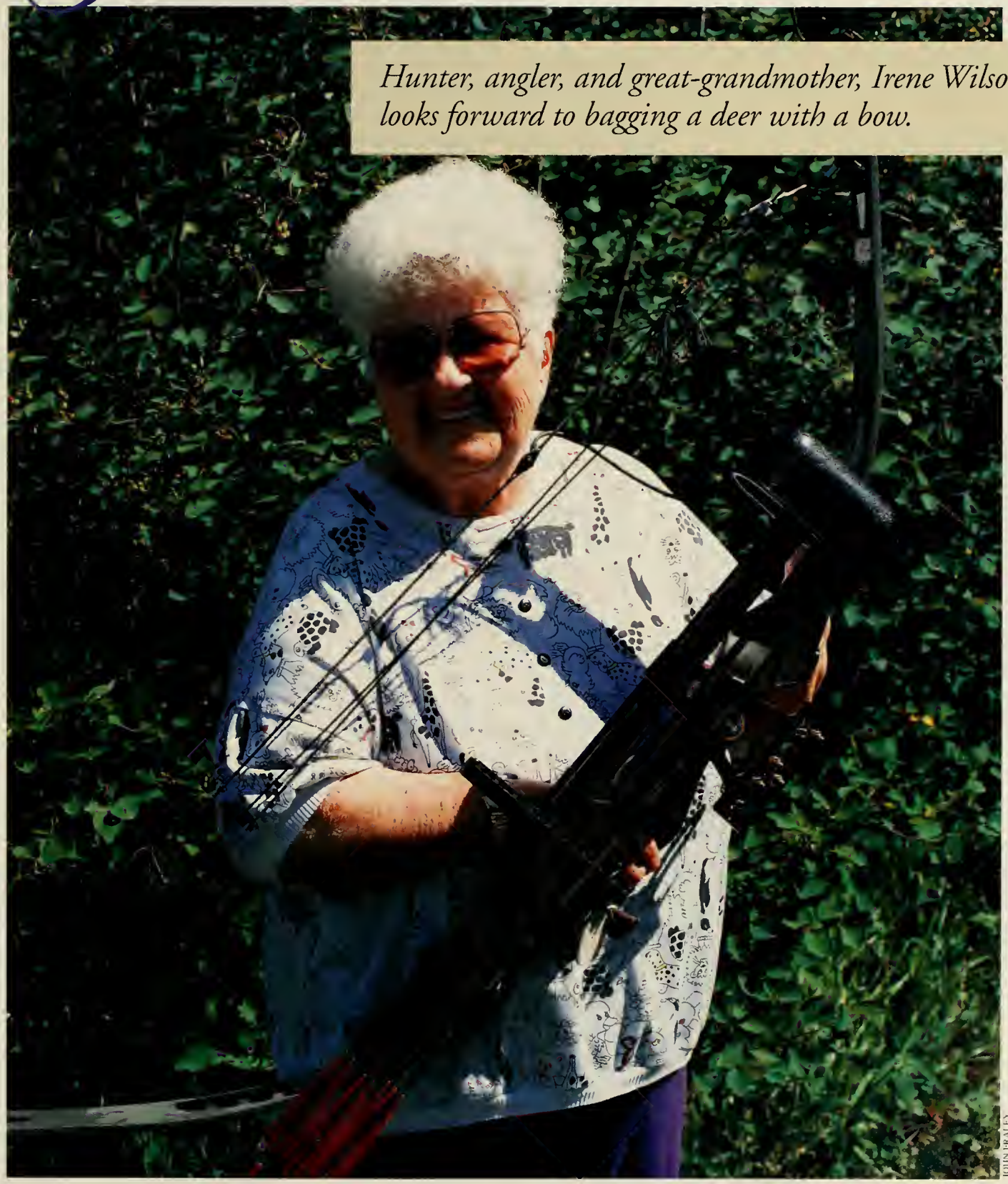
OUR 1994 SUMMER BANDING EFFORT on Lake Helena, completed in early September, employed three swim-in bait traps similar to those designed by Lincoln in 1922. They are built in the shape of a lily pad with a narrow funnel entrance. The four-foot-high traps are set in about six inches of water and are covered with light mesh garden netting to keep the ducks from escaping. A square piece of floating Styrofoam provides a loafing bar. We used barley as bait and, judging by the number of ducks that were trapped on more than one occasion, they enjoyed the "cooking."

1994 has been an especially important year for prairie nesting ducks. Good spring water conditions and cooperative habitat enhancement efforts across the region have paid big dividends, with Montana and the Dakotas hosting record numbers of breeding ducks. Production of young birds has been tremendous and, thanks to our banding program, some of them now sport new jewelry. Tracking the adventures of these long-distance travelers through band recoveries can help us fine-tune harvest and habitat management strategies that will maintain North America's waterfowl populations. ■

Irene

by JOHN FRALEY

Hunter, angler, and great-grandmother, Irene Wilson looks forward to bagging a deer with a bow.



JOHN FRALEY

IRENE WILSON HAS FOUR CHILDREN, 23 grandchildren, 60 great-grandchildren, and a great-great grandson. She has the grip of a truck driver. And she's a recent graduate of Montana's Bowhunter Education Course.

"I loved the course," said Wilson, 83, of Martin City, where she lives in a small mobile home that abuts a mountain. "I learned a lot, even though I've hunted for many years."

Wilson has shot rifles extensively but archery is new to her.

"I started with a .22 when I was a young girl," she said. "Then I graduated to a .300 magnum. I found out the hard way—a broken nose—that you had to keep that baby tight against your shoulder when you shot. I haven't had much of a chance to shoot a bow yet, but I fully intend to."

Wilson said that she is limited by her arm length and strength when drawing a bow. She is seeking a pull weight and draw combination that will work for her. "I'm excited about getting a bow. I have Cherokee in my background but I don't seem to have inherited their knack," she said.

Irene at age 19 (above) and at age 12 with her baby cousin. Wilson's lifelong love affair with the outdoors began more than 80 years ago, when she walked to a Nebraska farm pond with a cane pole and a can of worms.

Her son set up a hay-bale target in her back yard where she hopes to practice as soon as she finds a bow she's comfortable with. Bowhunter Education is a good course for anyone interested in the outdoors, according to Wilson.

"If you ever had a desire to shoot a bow, that class will bring it out in you. I like the idea of having to stalk the animal and get close, or having the animal come to you. I hope eventually to be able to hunt from a tree stand."

Wilson had praise for Bowhunter Education Instructor Mike Shepard of Columbia Falls. "That young fellow has found his field," she said. "He presents the material so that the youngest and oldest—me—could understand it. He's a good teacher."

Wilson's performance in class reflected her zeal for learning.

"She brought an enthusiasm and wit to the classroom that I haven't often seen," said Shepard, a former teacher. "She was extremely curious about how the equipment worked. And she got the class humming the first night."

Shepard added that Wilson's experience and knowledge of the outdoors was apparent. "In all the years I've taught, she's been the gem of gems," he said.

What has enabled Wilson to maintain her lifelong love of the outdoors? "I started out in Nebraska walking to a pond with a cane pole and a can of worms when I was a little girl. I still love to fish. I got so good at shooting that I could light a match with a bullet, all kinds of tricky stuff like that. I had good eyes and steady nerves. I can still shoot well enough with a rifle to hit the vital spot on a deer or elk."

Even though Wilson acquired good hunting skills, she often had to learn the hard way. "When I first started hunting deer I had a heck of a time with buck fever," she said. "Once, we were up in the Powell Lake area of the Sierra Nevada and I saw seven or eight deer walking down a hillside. Like a lot of other greenhorns, I aimed at the first deer and pumped every shell out of my gun. I could have sworn I was pulling the trigger."

Wilson grew up on a Nebraska farm with her aunt and uncle and two cousins, Joney and Dolly. "I was always Babe. From the time they took me in their home when I was 3 years old they called me Babe. My mother died when I was born after infection set in. Lots of women died in childbirth back then. I was never allowed to see my dad. My aunt and uncle provided for me but never showed me any love.

"When I was 3 years old, my two cousins took me around the house and told me, 'She's our mom but she's not yours.' So I pretty much had to learn to get by alone. My favorite game was walking on and rolling a 50-gallon drum. Then when I was about 7 or 8, I started digging my own worms and walking to the pond I loved to fish in. I had my own special place there where I could think of just nice things.

"From the time I woke up in the morning until I went to bed at night I was outside. There's something about being a loner from the time you're born. There's always something missing in your life. It seems like I can never fit in like I'd like to. Fishing always seemed to be a comfort to me."

Few people approach fishing with Wilson's passion and longevity. "No one really taught me to fish," she said. "I just came by it naturally. I've been fishing for almost 80 years."

Once, she and her husband were fishing for salmon on the San Joaquin River in California. "I hooked into a 20-pound salmon—I'll say 20 pounds just to be conservative—with a cheap spincast rod and reel. When the fish ran, he ripped the line off that reel down to the last turn, so I had to start horsing him. The star drag got caught under my thumbnail and ripped the nail off. My husband was concerned but I told him I'd get that sucker in even if he ripped my hand off. I played along with that fish and finally wore him out."

On a recent fishing trip to a lake near her home, Wilson doggedly fished for cutthroat trout even though the day was hot and the fish were not taking her fly. She handled an ultralight spinning outfit that she was using for the first time like a pro. And she tried fly casting for the first time. Although she didn't catch any fish, she vowed to get out earlier next time and try fishing the North Fork of the Flathead River. "I love just being out here, but I love catching fish even more," she said.

Wilson's enthusiasm about the outdoors and about life is uncommon, but it's based on a simple formula. "I think it comes down to staying young at heart. If you lose your sense of humor, you've lost it all. Then you begin to feel sorry for yourself. I had my first kid when I was 16, and I suppose I grew up with my kids; they raised me. And I think they did a heck of a job."

Throughout her life, Wilson has held a variety of jobs, including telephone operator, chicken plucker, cook, and pianist. A prodigious reader, she owns a library of 2,000 books. She's lived in California and Oregon in addition to Nebraska and Montana, and shared hunting and fishing experiences with two husbands.

"I believe in moving around a lot, seeing different country, doing new things," she said. "You can sit in a chair and rock and rock, but you don't get anywhere that way. I've never lost my love for hunting. I hope I never do."

Wilson's advice to parents is simple. "Kids get too much today, too much high-tech stuff, when they should be doing simple, outdoor things. Outdoors is the best place for kids." ■

"You can sit in a chair and rock and rock, but you don't get anywhere that way. I've never lost my love for hunting. I hope I never do."

DAN BURNS NAMED "WILDLIFE OFFICER OF THE YEAR"

Dan Burns, a Montana Fish, Wildlife & Parks game warden based in Deer Lodge, has been named the 1994 recipient of the prestigious Shikar-Safari Club International's Wildlife Officer of the Year award for Montana.

A 13-year veteran of FWP's Enforcement Division, Burns began his career in Bozeman as a warden trainee before being transferred to Billings, where he was stationed for three years. He then spent three years in Chinook before moving to his current Deer Lodge assignment in 1988.

The Shikar-Safari award winner is selected by the director of FWP from among nominations submitted by warden captains in each of the department's administrative regions. Award winners are selected on the basis of their professional relationship with hunters, anglers, and landowners in their districts, their performance of duty and dedication to the wildlife law enforcement profession, and their participation in activities outside of daily enforcement work.

Burns was recognized for, among many attributes, the excellent rapport he has established with landowners, hunters, and anglers in the Deer Lodge area, as well as for his work with landowners to solve game damage problems which has helped keep much private land in his district open to public recreation. He also played a major role in establishing the Montana Law Enforcement Museum in Deer Lodge, a project on which he volunteered many hours of his personal time.

FWP Director Pat Graham (left) and Safari Club International's Hy Erickson (right) congratulate Region 2 Warden Dan Burns on receiving Shikar-Safari International's Wildlife Officer of the Year Award for Montana.

The Shikar-Safari award, which is presented annually by the worldwide conservation organization to one wildlife law enforcement officer in each state, has been presented to a Montana game warden each year since 1969.

Howard Burt, an FWP wildlife biologist stationed in Malta, was recently honored as Ducks Unlimited Biologist of the Year for his efforts in restoring wetlands, constructing nesting islands, and improving recreational access on private land in north-central Montana. Ducks Unlimited is an international conservation organization devoted to protecting and enhancing North American waterfowl habitat.

THE NATURE CONSERVANCY

Family members and friends of Sally Tollefson gathered at The Nature Conservancy's Swan River Oxbow Preserve last summer to dedicate a nature trail in her memory.

Nature Trail Dedicated at Swan River Oxbow

The Nature Conservancy of Montana recently dedicated the Sally Tollefson Memorial Trail at its Swan River Oxbow Preserve. The trail was designed and built in cooperation with the U.S. Forest Service and with the help of crews from the Montana Conservation Corps and many volunteers. Funding for the project was provided by the family and friends of Sally Tollefson, a lifelong summer resident of the Swan Valley, who died in an automobile accident in 1990. "The trail will be a fitting tribute to Sally," says her brother Greg Tollefson. "Her love of wild places, the Swan Valley in particular, touched and affected many who knew her."

The interpretive trail winds through the preserve from the parking area near the spring creek and leads to an observation platform at the oxbow where visitors will have an opportunity to observe the complex interrelationships of flora, fauna, and hydrology that make this preserve unique.

The Nature Conservancy of Montana purchased the 392-acre parcel in 1986 and established the Swan River Oxbow Preserve. The preserve derives its name from a long, curving oxbow in which the Swan River used to flow. The oxbow is home to many wetland plant communities, many species of birds, and numerous rare plants, including *Howellia aquatilis*, which is the first plant in Montana to be listed by the U.S. Fish and Wildlife Service as threatened. This plant grows in marshy areas next to the oxbow. An annual plant with white flowers, howellia requires very specific conditions for its survival. Fifty-nine of the 107 known populations of water howellia in its historic range (Montana, Oregon, Washington, Idaho, and California) are located in the Swan River drainage.

The preserve is located 2.5 miles south of Swan Lake. From Highway 83 go west on Porcupine Road for one-fourth mile. A road on the right with a directional sign will lead you to a parking area and kiosk at the trailhead.

The Nature Conservancy is a nonprofit conservation organization that protects habitat for plants, animals, and natural communities. In Montana the Conservancy has protected more than 370,000 acres. Swan River Oxbow is one of eight preserves the Conservancy owns and manages in Montana. The Nature Conservancy of Montana has 4,800 members and has offices in Helena and Kalispell.—*The Nature Conservancy of Montana*

Video Magazine Available

Montana Fish, Wildlife & Parks recently released the Fall 1994 *Montana Outdoors Video Magazine*. The 28-minute video features segments on state lands access, FWP's block management program, the department's new Law Enforcement Division administrator, and "Direct Response," a question-and-answer session with Director Pat Graham. Free VHS copies of the video magazine are available at FWP offices or by calling the video production unit in Helena (406/444-2733). The Winter 1995 video magazine, scheduled for release in early January, will include segments on FWP's mountain lion environmental impact statement, the Private Land/Public Wildlife Advisory Council, and other topics of interest to sportsmen and women.

BEYOND FAIR CHASE, by Jim Posewitz, Falcon Press Publishing Company, P.O. Box 1718, Helena, MT 59624; 1994, 128 pages, hard cover, $17.95.

This clear, concise guidebook to the ethics and traditions of hunting is "must" reading for all sportsmen and women and all who are concerned about the future of the sport. In simple but powerful text, it describes the ethical way to hunt, from preparation to shooting to care after the shot. It approaches the question of hunting ethics with three basic concepts: a respect for the animals we hunt, an acceptance of our responsibility as conservationists, and an appreciation for the unique opportunity we have to be hunters.

Posewitz, who founded "Orion—The Hunters Institute" in 1993 after a 32-year career with Montana Fish, Wildlife & Parks, is a respected conservationist and eloquent spokesman for hunting and hunters. His thought-provoking text gets to the heart of hunting's role in the fabric of American culture, and what hunters must do to preserve its place there.

Illustrated by Helena artist Lisa Harvey, *Beyond Fair Chase* is a book that belongs in every hunter's library, in every hunting camp, and in the hands of every hunter education instructor and student to be read and re-read through the years. Part of the proceeds from book sales go to Orion to preserve and sustain hunting.

CAMP COOKBOOK, WITH FIELD STORIES BY DALE A. BURK, Stoneydale Press Publishing Company, 205 Main Street, Drawer B, Stevensville, MT 59870; 1993, 216 pages, comb binding, soft cover, $12.95 plus $2.50 shipping.

This unique cookbook, which offers field-tested recipes for meals to be prepared either at home or in the camp, contains more than 300 recipes, including a big section on wild game. Other sections include breads, casseroles and main dishes, desserts, meats, salads, sandwiches, snacks, soups, and vegetables.

Issued in 5-1/2 X 8-1/2-inch format with comb binding so it can be used with pages laying flat, *Camp Cookbook* also includes numerous photos of wildlife and wilderness settings, plus several stories of experiences involving unusual meals in the outdoors by author Dale A. Burk. For example, one of his stories, "It Ain't Stew Without a Rutabaga in It," deals with the memory of a famous stew made by a camp cook in Montana's Bob Marshall Wilderness in the early 1960s that assisted in the taking of a bull elk 28 years later by the author.

The book is dedicated to the memory of the late Lena Jane Bacon of Eureka, Montana, Burk's grandmother, who cooked for 35 years at guest ranches, wilderness camps, and lodges in western Montana. Among the many recipes offered in the book is one Mrs. Bacon was noted for, her soft molasses cookies, and the theme of the cookbook is a philosophy she advocated: providing healthful, nourishing, and tasteful fare.

WESTERN SKIES, by John Barsness, Lyons & Burford Publishers, 31 West 21 St., New York, NY 10010; 1994, 160 pages, hard cover, $18.95.

"Hunting wild birds sustains my life," writes John Barsness in the introduction to *Western Skies*, "as does growing my garden, writing stories, driving obscure Western highways, and the woman who hunts with me. These stories are not apologies for that life, but celebrations, because that is what hunting wild birds should be."

This book is a Montanan's look at the bird hunting of the West—the high plains and cottonwood riverbottoms, the sagebrush flats and mountain foothills. It's a look at country where sharp-tailed grouse still sail down buffaloberry draws and share the land with newcomers like ring-necked pheasants and Hungarian partridge that have adapted as well to the Western prairie as to their native haunts in Europe and Asia.

And every autumn, flocks of geese and ducks still sweep down from the north across the plains. It's a world made up of miles of grass, sage, stock ponds, and wheat fields, perfect habitat for the birds and also for the hunter who wants to wander in all directions, wherever the horizon beckons.

A book that all bird hunters will cherish, *Western Skies* is an entertaining mixture of bird hunting technique, humor, and natural history written by a master storyteller with a lifetime of experience hunting the birds of the Western mountains and plains.

GRACED BY PINES, by Alexandra Murphy, Mountain Press Publishing Company, 1301 S. Third Street W., Missoula, MT 59806; 1994, 127 pages, soft cover, $10.00.

"Pines are living constants in the landscape. They hold the West's history, both in the rings of their heartwood, hidden within like human memory, and in the outward manifestations of their daily living....By apprehending this history, we come to know pines, and in turn, to know the West."

So writes Alexandra Murphy in her introduction to these nine insightful essays on the cultural and natural history of the ponderosa pine.

Through rich prose and elegant pencil drawings, *Graced by Pines* recalls old stories and mythologies of the "yellowbelly" and examines the place of the pine in today's Western landscape. Individual essays explore the tree's importance in Native American cultures, follow the animals that depend on ancient ponderosa pine forests, and celebrate the pine's beauty and utility. The final essay, "Living Among Old Pines," thoughtfully illuminates the paradoxes of living in a land graced by pines.

Illustrated by the pencil drawings of Missoula artist Robert Petty, *Graced by Pines* blends biology, history, art, and literature in a way that readers are sure to enjoy.

1994 Montana Outdoors Index

The major items published in *Montana Outdoors* in 1994 are indexed below. Extra copies of all '94 issues are available at $2 each (includes postage). The following back issues are available at the same price:

1971—July/August, September/October
1972—July/August, September/October, November/December
1973—all issues, except March/April and May/June
1974—all issues
1975—all issues, except September/October
1976—all issues, except January/February
1977—all issues, including Yellowstone Special Issue
1978—all issues, including Special Parks Issue, except May/June
1979—all issues
1980—all issues, including Special Hunting Issue, except January/February and July/August
1981—all issues
1982—all issues, except May/June and November/December
1983—all issues
1984—all issues, except November/December
1985—all issues, except March/April
1986, 1987, 1988, and 1989—all issues
1990—all issues except July/August and September/October
1991—all issues
1992—all issues
1993—all issues

To inquire about or order a back issue, write: Back Issues, *Montana Outdoors*, Montana Fish, Wildlife & Parks, 930 West Custer Avenue, Helena, MT 59620.

FISH/FISHING/WATER

Summer Rains Brought Floaters to Smith River in 1993—A record number of floaters took advantage of good flows during 1993 (Bruce Auchly, The Catchall, March/April).

From the Field—Anatomy of a Fishing Movie—The award-winning FWP film "Three Men—Three Rivers" celebrates the values shared by people who step forward to protect wild trout and quality waters (Mike Gurnett, March/April).

Our Point of View—Bull trout have survived dams, competition with brook trout, and even a bounty, but now they need our help (Patrick J. Graham, May/June).

Further Adventures of a Travelin' Fish—A sequel to an earlier article describes activities underway at the local, state, and federal levels to protect bull trout populations and restore them to areas where they have disappeared (John Fraley, May/June).

Perspectives—A River of My Own—The Swan River and a family cabin provide solace, refuge, and opportunity for several generations of one family (Greg Tollefson, May/June).

Sauger Sagas and Trout Tales—Montana anglers set five new fish records in 1993 (Dave Books, May/June).

Madison Trout in the Marias—A transfusion of wild Madison River rainbows has created a tailwater fishery in the Marias River below Tiber Dam (Bruce Auchly, July/August).

The Life and Times of the Silver Flash—The goldeye may not win the hearts of many fishermen, but it makes up in numbers and willingness to bite what it lacks in fighting ability (Jim Liebelt, July/August).

Perspectives—The Birthday Fly—A long-forgotten birthday card and a special fly tied by an older brother inspire a fishing trip to the Clark Fork River (John Haviland, July/August).

From the Field—The Wonder Minnow—A tiny hybrid between the northern redbelly dace and the finescale dace is Montana's only asexual vertebrate (Tom Palmer, July/August).

Wallace L. Crawford: A Friend of the River—An avid flyfisherman's friends contribute more than $5,000 to improve a Bitterroot River fishing access site and name it in his honor (Neil Cantwell, The Catchall, July/August).

Fishes of Special Concern List Updated—Montana's "fishes of special concern" list alerts agencies and the public as to the status of native fish with limited habitats and/or limited numbers (Chris Hunter, The Catchall, September/October).

GAME/HUNTING

Perspectives—The Desperate Danger of Talking Turkey—Fashions for turkey hunters have changed out in the piney woods and gumbo knobs (Dan Vichorek, March/April).

Why We Hunt—When a woman hunter heads for the hills, the quality of the meat that ends up on the table is likely to be foremost in her mind (Eileen Clarke, September/October).

Perspectives—In September, It's Sharptails—Sharp-tailed grouse, bird dogs, and shotguns are a September tradition for many Montana hunters (Bernie Kuntz, September/October).

Mule Deer Are More Fun—A veteran hunter and outdoor photographer extols the virtues of the mule deer (Bill McRae, September/October).

Hunters Help Feed the Needy—Through a program called "Sportsmen Against Hunger," Safari Club International's Montana Chapter collects and distributes wild game meat to help the needy (Ron Barker, The Catchall, September/October).

From the Field—New Elkhorn Regulations Boost Bull Elk Numbers—A change in hunting regulations has dramatically improved the age structure of bull elk in the Elkhorn Mountains southeast of Helena (William Phippen, September/October).

GENERAL

Our Point of View—Today's game warden is a lot of things to a lot of people (Patrick J. Graham, March/April).

Beyond Road's End—The wardens and rangers who patrol Montana's backcountry are unanimous in their love for the work (John Fraley, March/April).

Cruwys Hits a Triple—Bozeman artist Roger Cruwys' rendition of a pair of wigeons took top honors in the 1994 Montana waterfowl stamp competition (William Phippen, March/April).

Wildlife Professionals Receive Awards—MSU professor Dr. Richard Mackie and FWP wildlife manager Jim Cross, both recently retired, are honored by The Wildlife Society (Gary Dusek and John Fraley, The Catchall, July/August).

Our Point of View—Agreements with Indian tribes can simplify licensing and regulations for harvesting fish and gamebirds on tribal and non-tribal lands within reservations (Patrick J. Graham, September/October).

Finding Common Ground—A state/tribal agreement is working for hunters and anglers on western Montana's Flathead Reservation (John Fraley, September/October).

Long-Time Enforcement Chief Kent Retires—Erv Kent, administrator of FWP's Enforcement Division, retired after a 36-year career (William Phippen, The Catchall, September/October).

The Big Sleep—A strange world of changing body chemistry and mopey body metabolism allows a wide array of creatures to survive cold, heat, and drought (Sam Curtis, November/December).

Perspectives—Irene—A great-grandmother tackles Montana's Bowhunter Education Course (John Fraley, November/December).

From the Field—Roger's Pier: A Lasting Tribute—A pier at Lake Elmo will serve as a permanent reminder of Roger Fliger's commitment to conservation and outdoor recreation (Sue Dalbey, November/December).

Nature Trail Dedicated at Swan River Oxbow—The Nature Conservancy of Montana dedicated the Sally Tollefson Memorial Trail at its Swan River Oxbow Preserve (The Nature Conservancy of Montana, The Catchall, November/December).

PARKS/DEPARTMENT LANDS

Lands Legacy—Small but Important: The Milk River Wildlife Management Areas—Two valuable wildlife areas are tucked into a curve of the Milk River east of Malta (William Phippen, March/April).

Perspectives—State Parks are for Families—Brittany Schendel, a fifth grader at Roy C. Swan Elementary School in White Sulphur Springs, won the 1994 State Parks Poster Contest (Debbie Cheek, July/August).

Lands Legacy—A Park for All People: Chief Plenty Coups State Park—A great statesman's gift serves as a place where people gather in friendship to learn respect for each other's culture (Ken Oravsky and Rich Pittsley, May/June).

Lands Legacy—A Leopoldian Alliance—A joint management plan for the Isaac Homestead Wildlife Management Area near Hysham provides a winning mix for sportsmen and landowners (Scott Denson, July/August).

Lands Legacy—Good Deeds Without Deeds—A complex conservation easement package has guaranteed habitat protection and hunting access on 40,000 acres in eastern Montana (Pat Gunderson, September/October).

Lands Legacy—Out of the Ashes—The Beartooth Wildlife Management Area has claimed a new, vigorous life after a major wildfire in 1990 (Bruce Auchly and Jim Williams, November/December).

Habitat Montana: Saving the Best of the Rest—A comprehensive program will guide FWP's land acquisition policies into the next century (William Phippen, November/December).

Our Point of View—Clear policies and plans are needed to preserve forever the best of the rest of Habitat Montana (Patrick J. Graham, November/December).

WILDLIFE

Watchable Wildlife—Aerial Acrobat—The snipe's spectacular mating flight would be the envy of any precision flying team (Bruce Auchly, March/April).

Dances with Grouse—The advent of spring transforms Montana's grouse into beautiful dancers and drummers (Dave Books, March/April).

CRP at the Crossroads—The Conservation Reserve Program has had many benefits for wildlife, but its future is uncertain (Dave Books, May/June).

Watchable Wildlife—Bunnies by the Bunch—Montana has eight species of rabbits and hares, but only four of them can properly be called "rabbits" (Dennis Flath, May/June).

Hummingbird Lovers: Beware of Perch-Hypothermia—A western Montana wildlife rehabilitator believes cold morning temperatures and cold nectar in feeders can make hummingbirds hypothermic (Judy Hoy, The Catchall, May/June).

From the Field—Ski route "track" surveys during winter months provide valuable information on furbearer populations (John Fraley, May/June).

Our Point of View—Anyone can enjoy the diversity of Montana's neotropical songbirds (Patrick J. Graham, July/August).

Watchable Wildlife—Birds of Passage: Celebrating Montana's Long-Distance Travelers—"Neotropical migrants"—the birds that fly south of the U.S. border each winter in search of food—need help in coping with our changing world (Deborah Richie, July/August).

Watchable Wildlife—A Narrow Fellow in the Grass—Prairie rattlesnakes aren't sinister creatures lying in wait for unsuspecting humans, they are simply going about the business of living (Dave Books, September/October).

Duck Populations Rebound—After years of declines caused by drought and poor habitat conditions, duck breeding populations rebounded sharply in 1994 (U.S. Fish and Wildlife Service, The Catchall, September/October).

Tracking the Travelers—Through banding studies, biologists are unraveling the mysteries of waterfowl migration (Jeff Herbert, November/December).

Watchable Wildlife—Wildness Incarnate: The Sandhill Crane—Observers can identify and interpret many of the sandhill's complex repertoire of behaviors (Janine M. Benyus, November/December).

ROGER'S PIER: A LASTING TRIBUTE

by Sue Dalbey
Parks Operations Specialist
Parks Division, Region 5

Wood, concrete, metal, and strong friendships have created a tribute that will last forever, along with the memory of a good friend and family member. A tribute, in the shape of a pier over Lake Elmo, is the realization of a friend's vision and a reminder of all the experiences that our friend shared with us. The relationships built between Roger Fliger and the many people he touched in 59 years allowed everyone to see his vision and will allow us all to use the pier as he would have. This tribute lures anglers off their couch to feel the trickle of adrenaline when the pole bobs and the line tugs. This tribute provides a bench for birders to spot mergansers resurfacing with a fish flapping in their bill. This tribute attracts people who enjoy clouds mirrored on the water from the evening sunset.

Roger supervised the Montana Fish, Wildlife & Parks office in Billings (Region 5) for 21 years. He died suddenly in July of 1992 when he fell down the stairs in his newly purchased home in Shepherd. Roger encouraged sportsmen and women and landowners to cooperate so each would help improve the resource and be able to enjoy it for years to come. He worked with many groups to the benefit of both wildlife and sportspersons.

Roger R. Fliger

A fully accessible fishing pier was built this spring as a remembrance of Roger. Roger's work reflected his love for the resources. Because of his own mobility challenges resulting from a serious car accident many years ago, he knew the importance of easy recreational access, and he knew how important it is for people to get the "taste of nature" that keeps them sane.

His friends, family, and the sporting groups in which he played a lead role gave generously to fund the pier construction. The Downtown Exchange Club of Billings donated $9,000 to the project, knowing kids would be a permanent fixture on a pier. The Safari Club International and the Montana Chapter of Safari Club International each donated $2,500. Combined with another $1,000 from the Billings Rod & Gun Club, these major donations completed the private portion of a 1:3 match with the Sport Fish Restoration Federal Fund. All told, more than $45,000 was contributed in the federal matching program. In addition, groups such as the Magic City Fly Fishers, Yellowstone Valley Audubon Society, and the Billings Fishing Club all recognized Roger's active

SUE DALBEY

Thanks to the donations of many organizations and individuals, Roger's Pier at Lake Elmo will serve as a lasting reminder of Roger Fliger's commitment to conservation and outdoor recreation.

role in their organizations. Over 100 friends and relatives recognized Roger's influence in their lives with gifts ranging from $5 to $150.

Dick Ellis, who in 1992 was the Fish, Wildlife & Parks supervisor in Miles City and has since filled Roger's position in Billings, donated a limited edition print of a female owl with her young. This scene depicted an experience Roger had at Chief Plenty Coups State Park not long before he died. More than $1,600 was raised through the sale of these wonderful black-and-white prints. (A few are still available from the Region 5 office, 406-252-4654.)

Built by Mackin Construction off the north side of the Region 5 headquarters, Roger's Pier extends 80 feet into Lake Elmo. It is constructed of pre-cast concrete panels set on concrete pillars, with a square tubing and redwood railing along the deck edge. A ramp leads around the headquarters to the pier, allowing easy access for all people.

Since its completion, the pier has seen constant use during morning and evening, the prime fishing hours. Channel catfish seem to be the most treasured catch, but yellow perch, largemouth bass, and a few black crappie provide a lot of action for young anglers.

Friends and family convened on Saturday, September 10, to dedicate the pier. The Fish, Wildlife & Parks commissioners scheduled their regular meeting for Saturday morning in Billings so they, too, could take part in the ceremony. Several speakers reminisced about special times and expeditions with Roger. Regional information officer Bill Pryor shared an exceptional film of Roger hunting geese, trapping turtles, and fishing for catfish, plus scenes from the pier construction, all set to music. The afternoon was spent sharing memories and nibbling refreshments on the pier. ■

Readers Respond

True Essence of Hunting

Eileen Clarke's "Why We Hunt" in the last *Montana Outdoors* was extremely biased, totally sexist, and absolutely true! With this approach, she has touched on several important aspects of hunting, and hinted at why the sport is condemned by many.

With feminine subtlety she has pointed out that the average hunter, a man, hasn't got a clue about what hunting is, how to do it properly, or why he does it. This "horn" hunter merely reveals the mediocrity in his life by his actions in the field. He believes that a fine set of antlers on the wall proves his otherwise non-existent macho character, and somehow offsets all his other substandard behaviors. In fact, the trophy, often taken by other than sporting means, simply confirms that he is a "red neck" of the first order.

Her article rings true. How many women get cited for a game violation, trespass, cutting wire, or shooting livestock? I've never heard of one. How often does a woman bring in a shattered carcass, gut shot, rump shot, or with legs blown away? Almost never. And yet, too often, she has to listen to the men explain away their lack of marksmanship and respect for the animal with,"If you don't shoot at 'em, you can't kill 'em! Har, har!"

More important than identifying the average hunter for the slob he is, Ms. Clarke addresses the true essence of hunting, pointing out that it is an opportunity to escape from our artificial world for awhile and return to a more natural way. Through hunting we can get back in touch with the rhythms of life, and renew a proper respect for the real world and the living things in it. It allows a return to normality.

Congratulations to Ms. Clarke for her much needed contribution. Thanks to you for publishing it.

I hope she fishes. Her thoughts on fish finders, sucker meat and marshmallows, and all night set-lines would surely be worth reading. Her treatment of the idiot who kills a big brood fish (that he should have released to ensure the species' future), and is proud of himself for doing it, would undoubtedly be elegant.—*Robert E. Chambers, Great Falls*

Thanks Again, Bill McRae!

Bill McRae's article "Mule Deer Are More Fun" in the September/October '94 issue brought back very pleasant memories. I called him once about an article he wrote in *Outdoor Life*. My uncle and I were asking information on mule deer hunting. Mr. McRae told us some of his favorite places. We had hunted a spot he told us about all morning, passing up a couple of bucks and some does. We were coming down the mountain about 1:00 p.m. A man and his two boys were by the side of the road. The gentleman told us he had spoken to a guy from Kalispell a few days before about hunting in the area we were hunting. My uncle and I introduced ourselves and told Bill McRae, "Thank you for the information." Not very many guys would share their hunting spots as Bill McRae did. Bill may not remember, but I do!

Mr. McRae, thank you for helping another sportsman have a fantastic time. Thanks again for sharing your "spot." I wish other "sportsmen" would follow your example!—*Richard Wilson, Grandview, Washington*

Credit where Credit Is Due

A few months ago I sent you a letter that was quite critical of your department. Now I had better give credit where credit is due. The story "Good Deeds Without Deeds" (September/October 1994) is one of the most fantastic plans I have ever encountered. I hope this program can be expanded and continues to grow. Perhaps it will be the answer to the public being "locked out" of so much hunting land. Thank you very much.—*Gary W. Sutherland, Brodhead, Wisconsin*

CONTRIBUTORS

Snow is in the air, and many of Montana's feathered creatures have already winged their way south. But most of the state's wildlife species remain here for the winter, some of them holing up for a long nap. Called hibernation during low temperatures and aestivation during high temperatures, "The Big Sleep" is a strange world of changing body chemistry and mopey body metabolism. To find out more about how some animals conserve energy by drastically slowing their normal body functions, turn to SAM CURTIS' article beginning on page 2. Curtis is a Bozeman-based free-lancer who specializes in outdoor subjects.

Curtis

"Nearly every culture lucky enough to live among cranes has mimicked the birds in its dances and featured them in its myths," says JANINE BENYUS in her article "Wildness Incarnate: The Sandhill Crane" (page 8). In this issue's "Watchable Wildlife" segment, she describes the springing, whirling dance these elegant birds are famous for, along with many of the other behaviors in their complex repertoire. Benyus writes about the natural world from her home in Stevensville; her books include *Beastly Behaviors: A Watcher's Guide to How Animals Act and Why*, from which this article was adapted.

Benyus

"If you are a hunter, or if you simply enjoy the beauty many species of wildlife bring to our landscape, you can appreciate the importance of good, productive wildlife habitat," writes WILLIAM PHIPPEN in "Habitat Montana: Saving the Best of the Rest" (page 14). A comprehensive program that will guide FWP's land acquisition policies into the next century, Habitat Montana is as much a way of thinking as it is a way of doing business, says Phippen. "It is based on the belief that conserving a variety of quality habitats for wildlife can help preserve Montana's rich wildlife heritage and help maintain our way of life." Phippen is an FWP information officer stationed in Helena.

Williams (left) and Auchly

In 1990, a wildfire burned nearly 80% of the Beartooth Wildlife Management Area's 32,000 acres. Since then, vegetative renewal along with travel restrictions and permit-only elk hunting have created an elk herd with a diverse age structure, from spikes to six-point bulls. In this issue's "Lands Legacy" installment (page 19), BRUCE AUCHLY and JIM WILLIAMS describe how a dynamic Beartooth has risen from the ashes to provide better hunting for more people. Auchly and Williams are FWP employees headquartered in Great Falls (Region 4), where they serve as information officer and wildlife biologist, respectively.

What do mosquitoes, marsh muck, and hot August days have to do with duck hunting? Each August since 1991, Pacific Flyway biologists have engaged in a catch-and-release form of "hunting"—duck banding—to help unravel questions about migrations between northern breeding areas, fall staging areas, and the principal wintering grounds, says JEFF HERBERT, FWP's statewide waterfowl coordinator in Helena. To learn more about how biologists are "Tracking the Travelers," turn to Herbert's article on page 23.

Herbert

Most 83-year-old women are content to cook, garden, and putter around the house. But not Irene Wilson, says JOHN FRALEY, author of this issue's "Perspectives" piece beginning on page 27. Wilson, a great-great grandmother who recently completed Montana's Bowhunter Education Course, is a lifelong hunter and angler who doesn't believe in rocking chairs—she wants to shoot a deer with a bow, and if past history is any indication, she'll do it. "You can sit in a chair and rock and rock," says Wilson, "but you don't get anywhere that way. I've never lost my love for hunting. I hope I never do." Fraley is the department's information officer in Kalispell (Region 1).

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Season's Greetings
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